

Chapin (J. B.)

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FISKE FUND PRIZE DISSERTATIONS OF THE  
RHODE ISLAND MEDICAL SOCIETY.

# ASTHMA;

ITS

## CAUSES AND TREATMENT.

BY

JOSHUA BICKNELL CHAPIN, M.D.

"————— Atque attractus ab alto  
Spiritus interdum gemitu gravis; imaque longo  
Ilia singultu tendunt —————."

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19 p. 80

At the annual meeting of the Rhode Island Medical Society, held at Newport on the 28th day of June, A. D. 1843, the Trustees of the Fiske Fund announced that they had awarded to the author of the Dissertation bearing the motto,

*"Atque attractus ab alto  
Spiritus interdum gemitu gravis, imaque longo  
Illic singultu tendunt—"*

the premium of fifty dollars by them offered for the best Dissertation on the question,

"What are the Causes, Character, Nature and best mode of Treatment of Asthma?"

Upon breaking open the seal of the accompanying packet, they ascertained its author to be, Joshua Bicknell Chapin, M.D., of Providence.

In awarding the premium for this Dissertation, neither the Trustees nor the Rhode Island Medical Society hold themselves responsible for the doctrines herein inculcated, treatment recommended, or opinions advanced.

Attest,

THOMAS H. WEBB, *Secretary.*

RICHMOND BROWNELL,  
THEOPHILUS C. DUNN,  
LEWIS L. MILLER, } *Trustees.*

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D. CLAPP, Jr., Boston, Printer.

## DISSERTATION.

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### *Asthma.—“ Its Nature, Character, Causes, and best Method of Treatment.”*

ASTHMA, though not immediately a disease of danger, is emphatically one of intense suffering ; and as such, if for no other reason, merits a careful investigation.

Many of the authors, who have noticed this disease, seem to have imbibed largely of vulgar notions, and, with a kind of heterogeneous arrangement, have included under the term asthma, almost every variety of disturbed respiration—making no distinction, except in degree, between dyspnœa, properly so called, and the true asthmatic paroxysm. From such carelessness have arisen the numerous discrepancies, inaccuracies, and almost utter confusion of the older treatises.

It would appear, from a perusal of the writings of the earlier physicians, that there was hardly a subject connected with either the theory or practice of medicine, upon which their ideas were more vague, or their curative intentions more widely different, than that of disordered respiration. Nor is this strange ; for, throughout the entire animal economy, there is not presented a function of more extended sympathy. The organs upon which it is dependent are so numerous, delicate and complicated, both in their individual structure, and their various dependencies, as to render the cause of functional derangement exceedingly obscure, if not altogether problematical.

Most authors have agreed in dividing asthma into two species : humid or moist, and dry asthma ; the one of free bronchial excretion—the other of scanty expectoration, or none at all. There appears to be some good reason for this distinction, in directing our curative process, and we shall,



as far as practicable, adopt it, though not with that absolute distinctness that marks theory oftener than practice.

The most important matter relative to the treatment of any disease is, the *proximate cause of derangement*. With remote causes we have little to do, or little to any practical purpose. The love of speculation has always kept the field well improved, and the ambitious scholar has here found a wide but misty range over which to broad-cast his assertions and plant his doubts. But with all the labor and all the ingenuity the results have been specious, and speculative, rather than valuable or of much practical account. To the majority of such efforts we may with propriety apply the adage—" *Montes parturient et nascitur mus!*"

Since, then, in the palliation, or cure of this disease, our attention should be directed to the immediately disturbing causes, we will proceed to enumerate some of them; and,

*Firstly*.—Among the most common causes of asthma, as well as dyspnoea generally, is gastric derangement, and that form of it usually denominated dyspepsia.

*Secondly*.—Organic derangement; malformation of the spine, and the walls of the chest, or its contents; hypertrophy of the heart, and ossification of the larger bloodvessels.

*Thirdly*.—Spinal irritation, independent of mechanical derangement.

*Fourthly*.—Nervous temperament.

*First*. Gastric derangement.—In a general way, it may be premised, that the disease is usually ushered in by an indescribable sense of tightness about the chest, as if it was closely bound, heaviness over the eyelids, drowsiness, pyrosis, fulness of the stomach, with much flatulence, a sense of weight and tightness about the forehead, headache, a peculiar lassitude, straitness of the præcordia, accompanied with nausea, fulness, eructation, or a disposition to eructate without the ability. I have noticed this as a very urgent and distressing symptom, especially when the disease occurs under the first division of causes. There is sometimes a gaping, as if sleepy, but followed only by anxiety, or disturbed rest. There is also a voiding, in profuse quantity, of pale urine, attended with some urgency at stool. The urine, though usually high colored, is not uniformly so; it is sometimes very highly colored, leaving a copious reddish-brown deposit. It is of importance to note this, since the diminution of the deposit, with the restoration of the natural color, is often one of the first intimations of the termination of the paroxysm, and the approach of convalescence. This inordinate flow of pale urine is sometimes also the only precursor to the paroxysm.

These are the general premonitory symptoms of the disease, whatever may be the cause of its accession. They are rarely all present in the same individual ; seldom more than two or three of them are prominent. I might mention one other premonitory symptom, which I think I have sometimes observed—namely, a very peculiarly disturbed respiration, wholly unlike the breathing during the paroxysm, nor yet like that disturbed function so uniformly dependent upon disease ; particularly during the early stage of inflammation in the respiratory system. I know not how to compare it—unless it is like a whirring—a *bruit de soufflet*—or the noise of the passing of air from a bellows.

As has already been observed, the disease is one of more distress than of immediate danger. It is a kind of Tantalus, depriving us of the enjoyment of that element, which is all around us, and of which we are the most in need. Being the thief of quiet rest, like other thieves it usually makes its approach at night, when its victim is sleeping most soundly. One reason for this may be, that, in the recumbent position, there is less freedom for a uniform distribution of the sanguineous fluid ; the chest is more confined by the weight of the body, the pressure of the front walls of the chest, and also by the falling back of the contents of the abdomen against the diaphragm, thereby diminishing the pleural cavity.

Moreover, as Dr. Good has very justly observed, respiration is so much a voluntary action, that, although it continues during sleep, it is nevertheless considerably aided by the concurrence of the will. Hence the most favorable period for the attack of this complaint is precisely that time in which it usually makes its appearance—during a recumbent position of the body, when the muscles of respiration are destitute of the active stimulus of volition. I have also observed that the hour of sleep is oftener chosen for an attack in its earlier accession than after the paroxysms have become habitual—for then they are constantly occurring at the presence of any and every exciting cause.

From the enjoyment of the soundest and sweetest sleep, the patient is suddenly summoned to a paroxysm of inexpressible anxiety and distress. He longs for the largest liberty, but finds himself most uncomfortably straitened. The sensation is that of being stifled or shut out from the air. He strips himself of everything that may be pressing upon him, breathes with a peculiarly distressing spasmodic action, and a whirring noise, and, if able to rise, rushes involuntarily to the window, or calls, if able to utter, for the free admission of cold air. There is a more or less urgent attempt to cough, and expectorate, succeeded by a discharge of a small quantity of cold frothy mucus ; this becoming more viscid and co-



pious as the paroxysm advances, until relief is afforded. The discharge is sometimes streaked with blood, and resembles the ordinary catarrhal discharges from the nasal passages. The pulse is often not much disturbed; it is sometimes very full, but not frequent, and again weak, very irregular, frequent or even intermittent.

Under the first head of causes, the stomach and small intestines are often much distended by flatulence, which, passing off by its proper issues, affords considerable relief. The disease progresses much after the manner described until the subsidence of the paroxysm; the usual period of which is four or five hours—seldom less, often more. If some return of it does not follow him through the day, and muster in full force the succeeding night, the patient may consider himself more than ordinarily fortunate.

Though usually attacking in the night, yet it is in this, as in many other particulars, very capricious. It occasionally occurs at early morn, while at mid-day the breathing is perfectly natural, and remains so until the succeeding night is far advanced, when the same difficulty again returns with the returning light. To such a person the darkness of midnight is better than the dawn of day. I once knew a patient who suffered from an attack every other day for more than two years, precisely at the hour of dining, and previously to taking his meals. He broke up the habit by prolonging his first meal, and omitting the second altogether.

During the paroxysms the temperature of the surface of the body falls somewhat below the standard of health, and the skin is often somewhat shrunken. It has also been remarked by some, that the expectoration varies inversely with the discharge of urine; when the one is full, the other is scanty; but we have never noticed this alternation.

The peculiar whirring noise, above referred to, is produced by the passage of air over the irregular surface, caused by a morbid accumulation of mucus in the bronchial passages. The continually returning difficulty of breathing gives to the asthmatic a peculiar cast, characteristic of the disease.

When asthma has once occurred, its tendency is to become habitual; and the sufferer may, with too much reason, expect its occasional return during the remainder of life, particularly if the first exciting cause cannot be removed. Indeed it is extremely rare that the patient escapes with only one attack. The breathing and general health may be better through the day and early evening, but as night advances, comes the troublesome visitor; inflicting the same torment as on the previous night, though, it may be, with abated severity. Indeed, in most cases each suc-

ceeding night finds the patient easier, until free breathing and undisturbed repose are thrice welcome.

The disturbance of respiration is usually aggravated by motion, the pressure of the bed clothes, or anything depending unduly upon the chest, or even in some cases by tight shoes, or whatever disturbs respiration ordinarily. The upright posture is usually the most easy, for the simple reason that in it, the cavity of the chest is most enlarged, and the muscles of respiration play with the least restraint; the back is free, the walls of the chest expand, and the diaphragm falls down upon the descending viscera, thereby increasing the pleural cavity in every possible direction. Hence patients instinctively resort to this position at every approach of this frightful disease.

We will now very briefly give our reasons for believing that gastric derangement is often a mediate cause of the disease in question. It has been denied that asthma is the result of spasmodic action, because the anatomical structure of the parts affected, viz., the bronchial tubes, precludes the possibility of spasmodic action; inasmuch as it is a universally-conceded fact, that muscular fibre is the only tissue obnoxious to this action. Now the bronchial tubes are everywhere, throughout their structure, chequered and surrounded by a collection of minute fibres. These fibres may, in some forms of disease, be easily demonstrated, especially in the larger branches; but ordinarily, and in the minute ramifications, they elude the dissection of the anatomist. Although these fibres do not present, even under the microscope, the ordinary appearance of muscle, yet it has been clearly proved, by a series of galvanic experiments, instituted for the purpose, that they are capable of being excited into alternate contraction and relaxation by the agency of the fluid. They are consequently subject to spasmodic action, or, in other words, they are minute muscular tissues, pervading and enveloping the air tubes and cells, and are intersected and ramified by the par-vagial nerves. Since, then, any irritation of these nerves would occasion the spasmodic action of the fibres through which they ramify, we can readily understand, by the well-substantiated theory of reflex transferred irritation, how any derangement of the gastric apparatus would directly excite the disease in question. Morbid acuteness of the nerves of organic sensibility is oftener depending upon some derangement of the function of digestion, than upon any other cause. The disturbed impression is conveyed to the nervous centres, and thence reflected to the sympathizing organs, viz., the bronchial vessels, by the excito-motor nerves of these organs. Moreover, unless the processes of chymification and chyfication are properly performed, the



chyle will fail to reach the lungs in a fit state for oxidation in those organs ; there will follow an elimination of imperfect blood, and the lungs will not receive their supply of healthy stimulus ; the sequence of which will be, undue determination of sanguineous fluid, congestion, irritation ; and, in a fit habit, the whole train of alternate spasmodic action, so frightfully distressing in the confirmed asthmatic.

It appears to me that the foregoing view makes it very plain, that want of integrity in the digestive apparatus is oftener a cause of the disease under consideration than is usually conceded.

A little reflection upon the general health of the asthmatic, and the similarity of many of the precursory symptoms, with those of dyspepsia, will render the subject still clearer. Besides, the treatment by which we may expect a cure in the one case, will almost invariably afford more or less relief in the other. In our treatment of the disease when occurring under this class of causes (gastric derangement), we are to pursue the ordinary palliative course. With regard to the relative importance of our treatment as being radical or palliative, while some contend that nothing can be done during the paroxysm, others as stoutly affirm that our curative efforts must cease with the fit. Both these positions may be true. The promise of relief or cure will in most cases depend upon the nature of the exciting causes.

The first object will be to relieve the stomach of its contents, and determine to the surface. To effect this, an emetic may be administered. Ipecac. is the most preferable, as it is the less violent in its operation. The earlier it is given, after the symptoms approach, the better. It often acts most favorably in union with squills, particularly the vinegar of squill. If the vomiting prove excessive, cold water, with a cataplasm over the epigastrium, is highly serviceable. When necessary, the nausea may be protracted by vinegar of squill or lobelia. The only case where *vinegar* of squill is contra-indicated is in cases of acidity, and then magnesia or chalk may be combined with the nauseant. For the correction of flatulence, the usual carminatives, united with assafoetida, unless the latter prove too stimulating, will be of service. The disposition to acidity, especially when combined with a tendency to lithiasis or a podagric diathesis, must be corrected by lime water or the alkaline earths, particularly magnesia. I have known this earth alone effect an entire cure in a case of chronic asthma dependent upon imperfect indigestion. The bowels should be gently moved ; but free purging, or repeatedly violent vomiting, are both manifestly injurious. Rhubarb, combined with magnesia and soap, is a good laxative. Small doses of ipecac., with some vegetable



bitter, as gentian, or colombo, have proved a healthy stimulant, and contributed largely to a change in the action of the secretants of the stomach. We have done much in allaying irritation by the subnitrate of bismuth. In short, whatever corrects the dyspeptic diathesis, will be found to relieve the asthmatic symptoms. Lobelia, operating as an expectorant and narcotic, we have found useful.—R. Tincturæ lobeliæ, f ʒ ss. ; acet. scillæ, f ʒ j. M. Give every hour or two. Also the following in a cold, lax, phlegmatic habit :—R. Tinct. lobeliæ, tinct. assafoetidæ, vini ipecacuanhæ, aa f ʒ ss.

When there is a manifest disposition to catenate with pleurisy or peripneumonia notha, we have derived great benefit from the following combination :—R. Infus. sennæ, f ʒ ss. ; acet. scillæ, f ʒ ss. ; liq. ammon. acet., f ʒ ss. M. Cap. q. t. h.

The excessive spasmodic action is often allayed by the inhalation of the smoke of narcotics, especially that of stramonium root. Emollient and carminative enemata are useful where there is a disposition to costiveness, with an irritable condition of the abdominal viscera. An excellent sedative diaphoretic is the Dover's powder, exhibited in pretty full doses every three or four hours. Diuretics, in combination with opium, are proper, as revellents. They are most serviceable in cachectic, dropsical habits. The following recipe may be given with this intention :—R. Pulv. jalapæ, gr. x. ; pulv. potassæ bitart., ʒ j. ; pulv. opii, gr. i. M. Administered twice a day.

For the immediate *relief* of the paroxysm, there is no class of remedies upon which we may so confidently depend as upon expectorants. They relieve the enlarged vessels. When the secretion is copious, they remove it, and where it is scanty they excite a remedial flow. As observed above, squill and ipecac. in combination form our best dependence. It sometimes, though rarely, happens that the diuretic action of the former should be checked by opium. Nauseating doses of the above may be administered *pro re nata*. Alliaceous demulcents are often exhibited with advantage.

In full two thirds of the patients that have come under our observation laboring with asthma, the symptoms of indigestion in some form have been prominent, both before and after the attack. Pyrosis, dulness, præcordial oppression, fulness, nausea, flatulence, constipation, &c., the constant symptoms of the one, are no less characteristic of the asthmatic habit. Notwithstanding all this, I believe that asthma does not so often depend upon a simple physical condition of the system, as upon a positive and actual imperfection, or contamination of the blood. The latter state

is produced by a deficient, or imperfect assimilation of matter going to make up the sanguineous fluid; dependent upon a chronic derangement in the digestive, or assimilative apparatus. This want of integrity in the blood, by the sympathy of irritation, produces a constant tendency to a preternatural determination to some part, and every one, familiar with the phenomena of respiration, knows that the organs concerned in the performance of this function, are, of all others, the most liable to suffer from sanguineous turgescence; and, as a preternatural fulness is often an immediate cause of the asthmatic paroxysm, we can again easily see how large a share imperfect digestion has in its production.

Much may be accomplished in the disease occurring under this form, by a well-pursued, judicious prophylactic or hygienic treatment. The first thing of importance is, that the diet should be mild, nutritious and easily digested. Those articles of food should in all cases be selected, which yield the most nourishment with the least tax upon the digestive and assimilative apparatus. All high-seasoned food, as pastry in all its forms, newly-baked bread, particularly when heavy and clammy (of which, for the credit of our housewives, there is far too much), fish, &c., should be avoided. Not that I would be understood to recommend a vegetable diet, but to use the more stimulating articles of food sparingly. Moderation in eating, combined with proper exercise in the open air, will contribute more to a healthy action, a due supply of proper blood, and a consequent equal distribution of that vital fluid, than anything besides. It is also of importance that the asthmatic should allow himself sufficient healthy exercise in the open air and light, and, when practicable, in the open fields. Attention to these particulars will contribute much to that free, easy and cheerful state of mind, of so much importance to perfect well-being. This becomes of more consequence inasmuch as the asthmatic is peculiarly exposed to the ill effects of gloomy, depressing mental emotions, and an irritable, nervous habit. Regular seasons for partaking food, and early hours for rest and rising, should be observed.

Since an asthmatic temperament is so easily affected by atmospheric vicissitudes, so subject to suffer from a torpid action of the cutaneous emunctories, ordinary precaution will dictate the use of light and warm clothing, to protect from the evils of the one, and to stimulate the functions of the other.

I would again caution against the use of too little food, as an evil next in degree to too much. Proper repletion will render to the organs of digestion that degree of stimulus necessary to a healthy energy. Each



organ needs its appropriate exercise, and requires a supply of that upon which it is to perform its functions.

The *second* head of causes includes the several organic or mechanical derangements that contribute to the disease : and here it may be remarked, that whenever asthma occurs from any of these causes, our prospect of effecting a cure is small indeed. Perhaps the most we may hope for is an amelioration of its severity.

That form of spinal distortion usually denominated humped back, is as often connected with this disease as any other. The symptoms are more aggravated when the deformity occurs in the cervical vertebræ. The muscles concerned in respiration are then much straitened, particularly the *scaleni* ; there is much depression of the sternum, and the whole chest is shortened in its antero-posterior diameter. When the deformity occurs lower down, in the dorsal vertebræ, the lower ribs are then turned outwards and upwards, and there is a diminishing of the chest in its perpendicular diameter. Should the deformity occur still lower down in the column, there will arise the same compression as the last, but by the chest falling down, in some extreme cases almost to the pelvis.

The treatment in all these cases will be almost wholly confined to the relief of the deformity and the correction of the general health. I believe it occurs oftener in males than in females, and is usually associated with a scrofulous habit, and is believed to be somewhat hereditary. It usually occurs in early life, and wears out the sufferer before reaching middle age. We may expect more advantage from counter-irritation, as blisters, setons, and rubefacient embrocations, united with some tonic and alterative, than from any other course. The remarks above, upon prophylactic treatment, are equally applicable to the disease under this form. For the general treatment of the deformity, I refer to the several treatises on surgery, and also to the dissertation by Dr. Parsons on spinal diseases, who says that "the leading indications are, to prevent the increase of distortion as soon as possible, to stay the progress of ulceration of the vertebræ, and to produce anchylosis. The first is answered by taking off the incumbent weight," the second by rest and counter-irritants. "These may be continued on each side of the spinous processes of the projection, for some weeks, or even months." The last indication is effected by entire rest.

Hypertrophy of the heart and ossification of the large bloodvessels, by inducing an irregular circulation, and an undue dissemination of blood, have been thought to produce asthmatic turgescence. When the disease

occurs from these causes, I am not aware that there is any hope of remedy or palliation.

The *third* head of causes includes spinal irritation, and other diseases of the contents of the spinal column, independent of any mechanical derangement of the column itself. It was long observed that asthma was concomitant with some disturbance of this kind, but it remained for the theory of transmitted nervous irritation to develop the manner by which the one disease became a consequent of the other. This transmission is often reciprocal. Deranged function may not only be produced by spinal irritation, but an idiopathic derangement in some one or more organs may be transmitted through the incident or excitatory nerves, as they are called, to the spinal marrow, and this again reflected to some other organ than the one primarily affected. Pathological anatomy has thrown but little light upon the subject. A close observation of the phenomena of disease and of the widely-extended range of morbid manifestations, have as yet afforded us the best source of information. Asthma is oftener the consequence of spinal irritation, when this is confined within the cervical region, and for the very obvious reason that the roots of the nerves distributed to the parts affected, find their origin in this region. There is almost always a tenderness upon pressure over the vertebræ, attended with pain in the scapular and clavicular regions, and I knew in one instance the suffering most intense along the intercostal region, accompanied with some pain along the ribs. When these symptoms are present, although there may be no pain upon pressure, we may conclude, with a good degree of certainty, that the disturbance has its origin in irritation at the nervous centre. Especially will this be true, if the health has not been impaired by the presence of other disease. Asthma from this cause occurs oftener in males than in females, and oftener in the unmarried than in the married. It has been observed that thoracic diseases are more liable to occur as consequents of spinal irritation than any other, and the diseases are aggravated by hypochondriasis and severe mental emotions.

Whenever we find asthma occurring from the cause designated, our treatment will be almost exclusively confined to the removal of spinal tenderness. This can best be effected by a prolonged, but moderate course of topical depletion, either by leeching, cupping, or a seton. If cups are applied, it should be done regularly, and a given amount taken at each application of the scarificator—the quantity taken of course depending upon the plethora of the patient, and the urgency of the symptoms; but by all means let it be uniform and regular. This, combined



with counter-irritation by the ordinary ammoniated liniment, camphor liniment, or liniment of cantharides, will often remove the disease. Gentle exercise by slow journeying, or a change of climate, will operate favorably. If the habit is full, general depletion should premise all other treatment.

It may be remarked that asthma is oftener induced by irritation of the membrane of the spinal marrow, than by irritation of the substance itself. Moreover, these disturbances frequently alternate with each other—but since the treatment of each is nearly the same, a false diagnosis of the seat of the disease will lead to no practical error.

*Fourth.* A preternaturally nervous, phlegmatic temperament, if not strictly a cause, wonderfully favors the attack of asthma. In such habits it usually makes its appearance soon after puberty, or in middle life; and occurs much more frequently in the unmarried female than in the other sex. Extreme nervous irritability not only invites the attack, but aggravates the symptoms and prolongs its continuance. Exciting causes operate with marked effect in this form of the disease, and the approach of the paroxysm is usually very sudden, while the remission is gradual, sometimes almost imperceptibly so. The influence of idiosyncrasies is never more obvious or more amusing than in the nervous, confirmed asthmatic. The capriciousness of the disease is all that the most extravagant humorist could desire. What will almost universally relieve in one case, will as assuredly induce a paroxysm in another. Ordinarily the air of low situations is more congenial than mountain breezes. The most indeterminate and irreconcilable influences are quite as effective as those of a more positive and tangible character. Some suffer in a certain room, but are immediately relieved if removed to an opposite room in the same house. One cannot sleep or rest in one street, or lane, but slumbers quietly if removed to another part of the same village or city. Another can breathe freely if he can only be allowed to sit in a room filled with smoke to suffocation, but pure air is almost intolerable. I once knew a patient who assured me, that if the damper of the stove was closed, he was sure to suffer from an asthmatic paroxysm; but upon its being thrown open, his breathing returned, to use his own expression, “as quick as a lamb’s.” The mere extinguishment of a lamp, or the closing of a passage way, has been observed to induce a fit. While one is benefited by a journey in the country, another will find more relief in the contaminated atmosphere of the densest mart, than in the freshest breeze of the quiet vale. While one will resist with impunity almost any change or extreme of temperature, the sensitiveness of another, encircled

by his fireside, will form as sure an indication of atmospheric vicissitude as the mercury of the thermometer or the vane upon the house-top. Most will avoid a crowded assembly as they would a pest-house; but I have a friend who always resorts to such a place, when practicable, for a moment of quiet breathing. In short, nothing can be more amusing than the various whims of the confirmed asthmatic.

All these cases owe their origin to certain mental impressions, or emotions, conveyed through a deranged organic medium. The predisposition to this state of things appears to be hereditary, rendering the disease emphatically one of the "ills that flesh is heir to."

Our treatment, under this form of disease, will vary exceedingly with the character of the symptoms, and the *exciting* cause. In young and plethoric subjects, bloodletting may be resorted to, but should always be practised with caution, especially in those cases where the paroxysm is often occurring and immediate relief is not afforded. Purging freely is not often judicious, except in full habits, and where the bowels are overloaded with acrid contents. Indeed, excessive purging seldom fails to be productive of injury. It does not immediately relieve the turgescence of the affected organs, and, by unduly stimulating the alvine canal, occasions debility or unfavorable re-action, prolonging the attack and the period of convalescence. If, upon a sudden attack, obstinate constipation prevails, an emollient enema would be proper, and in all cases care should be taken to keep the bowels open by the milder laxatives.

Since congestion of the membrane lining the bronchial passages, combined with spasmodic contraction of the circular fibres, supervenes in the humoral variety of this disease, relief of turgescence, with subsidence of spasmodic action, may be expected from emetics, nauseants and expectorants. In the dry form of the disease, spasmodic action occurs without congestive complication; here sedatives, narcotics and the diffusible stimulants, are most beneficial. Emetics operate as evacuants and derivatives, relieving oppression and determining to the surface. I have often known a moderate dose of ipecac., followed by magnesia, prevent an attack, even where the premonitory symptoms were very urgent; the latter correcting the disposition to flatulence, frequently a source of so much annoyance to the asthmatic sufferer.

The same effect has been produced by the free exhibition of strong coffee. I have known several cases of dry asthma, where a cup full of strong coffee, administered previous to the paroxysm, has removed all unpleasant symptoms, and allowed the patient quiet rest. It is also of



service in that variety of humid asthma that assumes a periodical type. It may be repeated every hour, or even at shorter intervals, without milk or sweetening, as sugar or syrup is found to be disadvantageous in every variety of the complaint, and should be avoided. The reason of this is not obvious, unless it may be supposed to arise from their unfavorable influence upon the digestive function. The operation of the coffee is that of a sedative.

Blisters have been recommended by some; but so far as we have been able to judge, they are of doubtful efficacy, especially in the spasmodic variety. Their action is too slow to afford much relief during the paroxysm—and whether they operate beneficially during the paroxysm, may well be questioned. Good supposes that they shorten or prevent the paroxysm during the succeeding night, “especially when the *habit* is asthmatic.” The older physicians were very free in their application of issues, under the ill-founded notion that asthma depended upon a plethoric state of the system, and that issues operated favorably by reducing the excessive plethora to a healthy standard. Every practitioner of modern times will satisfy himself how unwarranted is such a course.

Where they are not contra-indicated, anti-spasmodics may be serviceable, as musk, sulphuric ether, chlorine, ether, &c. &c.; but in most cases, they prove too stimulating. As a general experience, we have found this class of remedies of little service, either in mitigating the intensity of the paroxysm, or shortening its duration. We have found them most likely to afford relief in the dry asthma, and even here they have seemed to operate as derivatives. They sometimes excite nausea, and then of course will be serviceable; but as we may accomplish the same end more directly, their employment may well be dispensed with. An unpleasant determination to the head is sometimes a consequence of their exhibition, accompanied or followed by febrile exacerbation, and proving extremely pernicious in cases connected with local or general inflammation, or congestion. If employed, I would recommend their union with diaphoretics. Opium, when the disease is complicated with visceral inflammation, has been found to be worthy of trial.

Cold extremities are sometimes attendant, particularly during the winter months. In these cases there is more or less catarrhal affection. Warm clothing, dry feet, and the usual correctives for pulmonary derangement, may then be used. An unduly elevated temperature is more favorable to the disease than the opposite, though a sudden exposure to either should be sedulously avoided.

In the asthmatic, whatever suddenly disturbs the circulation increases the difficulty of breathing, such as exercise, passion, starting suddenly, &c. &c. I have known the least change of posture, such as rising from the chair, or bed, or even the ordinary adjusting of the clothes, to transfer the patient from comparative ease to a paroxysm of intense suffering. There is, moreover, a disposition to repetition of the paroxysm at irregular intervals, or upon the presence of any of the superinducing causes; especially the one by which it was first ushered in. Indeed, after one attack, the patient is seldom free from some degree of dyspnœa upon any undue exertion, and is always complaining of "shortness of breath."

Sudorifics are in most cases beneficial; united, in weak, flatulent habits, with some vegetable bitter, as colombo or gentian. In some persons the mineral tonics answer an excellent purpose. I would, however, advise their cautious exhibition. The compound myrrh mixture, lactate, or acetate of iron, I have found to agree best. In some cases, complicated with extreme hypochondriasis, I have found guaiacum, particularly the volatile tincture, in combination with some of the above tonics, worthy of trial.

A prolonged nausea will do much in relaxing muscular rigidity, overcoming spasmodic habit, and, operating as a derivative, will promote the excretion, and cuticular action. To effect this purpose, equal parts of tincture of lobelia, vinegar of squills and wine of ipecac., will accomplish most. I am satisfied that a protracted administration of this nauseant mixture, united with aperients and inhalation of the fumes of stramonium, form our best general dependence in all cases of asthma arising in a nervous, sanguineo-melancholic temperament. Each case will, of course, demand some particular treatment, to be determined by the *exciting* cause, the habit of the patient, and idiosyncrasy. Hydrocyanic acid proves a valuable remedy in those cases of asthma occurring in females of an irritable catarrhal habit, especially when accompanied with much cough, dyspnœa, and acute lancinating pains about the chest, particularly over the region of the heart. It operates as a powerful sedative. In the employment of an agent of such activity, too much caution cannot be exercised in its administration. It should be free from all impurities, and retain its officinal integrity. I have usually commenced with one half the minimum dose, given in *distilled* water. R. acidi hydrocyanici, m. i.; aquæ destillatæ, m. xx. M. One half to be taken morning and night, gradually increasing the dose *pro re nata*. Floyer recommended occasional vomiting as a prophylactic, but its efficacy we have never confirmed.



When it is necessary to resort to a very gentle evacuant, perhaps there is no article that will answer our purpose better than senega, given by itself or combined with squills. In most cases we have found it well to premise it by a purge. A hydragogue cathartic is best.

Acids are sometimes of much service, particularly the vegetable. They seem to act both as sedatives and tonics. Distilled vinegar, in union with a diaphoretic or with lobelia, I have thought useful; it allays irritation, and promotes exhalation and absorption. Hyoscyamus has been resorted to. I have used it, and am inclined to think favorably of it, and consider it a valuable adjunct. Bree speaks of it in the highest terms. He administered it in conjunction with squills and nitric acid, and is high in its praises. He considers it a specific—of which it has been the misfortune of the profession to allow too many. They may serve a purpose in the empty pretensions of the quack, but should never enter the prescriptions of the well-bred physician: much less should they be allowed to influence his practice. They have all had their short day, as all specifics will.

Besides the causes already alluded to, asthma owes its accession to the sudden disappearance of cutaneous eruptions, the drying up of old ulcers, the suppression of any habitual discharge, &c. When this occurs, the indications are to restore the eruption, &c., by revellents or setons, and to correct the vitiated habit.

It is also produced by the odor of flowers, particularly that of roses. The dust of ipecac. is another source of excitement. It is sometimes closely connected with hysteria or chorea. It is often induced by suffocating, mephitic gases, sudden exposures, violent exercise. When the disease has become habitual, very inappreciable causes are sufficient to excite a paroxysm. Asthma seems also to be hereditary.

*Diagnosis.*—We have omitted any remarks on diagnosis, because ordinarily the disease offers no difficulty in this particular. It simulates ordinary catarrh, but may be distinguished by the absence of fever, soreness of the throat, by its occurring intermittently, and by the secretion being more profuse as you approach the lungs. It also resembles apoplexy, and is sometimes a precursor of that fatal disease. In asthma, however, there is wanting that rolling of the eyes so characteristic of the latter disease.

It may be distinguished from hydrothorax by the sudden approach of the dyspnœa. Hydrothorax is less affected by atmospherical changes. There is often, however, a remarkable similarity in the phenomena of

these two diseases, and it is not the most remarkable occurrence to find them confounded in practice. They frequently alternate with each other.

*Prognosis.*—Asthma is not ordinarily a fatal disease. In peripneumonia notha, when it occurs simultaneously with asthma, or when asthma immediately follows an attack of the former disease, the case is one of much danger. Very frequent returns of the paroxysm, or if much prolonged at each successive attack, profuse secretion, with laborious breathing after the fit has passed off, are all more or less unfavorable, according to the state of the general health, and the urgency of the attending symptoms.

The disease sometimes critically terminates by diarrhœa, or diuresis, though the supervention of these is not in every case to be considered a favorable indication. It also terminates vicariously by the appearance of some other disease, or by some peculiar sensations, as pain in the posterior part of the head, a burning in the feet and hands, excessive flatulence, hypochondriasis, &c. The most critical union that asthma makes, is with pleurisy. When this occurs, the combination is formidable.

Though not considered a fatal disease, it is one of much torment, and by depressing the vital energies it renders the constitution more obnoxious to other diseases, and those, too, of very grave character. It sometimes so relaxes the mucous glands of the bronchiæ, that an habitual secretion of glairy mucus is induced, that proves a source of much annoyance.

Thymic asthma, another variety of asthma, not often observed, seems to be dependent upon a preternatural enlargement of the thymoid gland, pressing upon the bronchiæ, or upon the par-vagus, closing the air-passages, and producing the disease called, in consequence, thymic asthma. It appears to be congenital, and manifests itself in infants within the first two or three years; although occasionally observed in children 7 or 10 years of age. The attack is usually very sudden; during apparently perfect health, and perhaps in the full enjoyment of a child's frolic, the little sufferer becomes suddenly convulsed, and breathes with exceeding difficulty, if indeed it breathe at all. Its eyes are turned back, it froths at the mouth, and suffers all the agony of death. This state of things continues for a few moments, or it may be longer, and the child is apparently well again. Sometimes the difficulty of breathing remains, with more or less urgency, for some days or even weeks, resembling at times cynanche trachealis, and I have no doubt is sometimes mistaken for it.

The most relief in cases which I have seen, was found in nauseating doses of ipecac., with calomel, if the bowels were torpid, combined with



a counter-irritant, such as an epispastic or sinapism to the throat, or a stimulating lotion of ammonia and oil of sweet almonds.

In other cases, the disease has advanced from bad to worse, until the patient has sunk under it, without relief. I have never seen but two cases of the disease—the one occurring in a child 12 months of age, of a strumous habit from birth. I saw the case but once, but have since learned, from its mother, that it had five attacks, each succeeding one increasing in severity until the last, which proved fatal. The second case occurred in a fine, healthy-looking child, 9 months old; rather fat, but had always been troubled with watery stools, and occasionally by a cough, for which there appeared to be no assignable cause. This child had but two paroxysms, the last being much less severe than the former. They occurred at an interval of two weeks. I solicited a *post-mortem* examination, and found the thymoid gland nearly seven inches in length; the right cornu very much longer than the left; the whole pressing heavily upon the larger bloodvessels, and some of the par vagial nerves. The lungs appeared healthy. The brain and abdomen were not examined. In the treatment of both these cases, I pursued the usual course of aperients, expectorants, nauseants and revellents, but all to no purpose. In both cases the children were of a marked scrofulous habit, and strongly predisposed to glandular affections. Were I to meet the disease again, I should be disposed to try the iodide of potassium, with some general alterative and aperient, and combined, perhaps, with a lotion of iodine in some form, over the seat of disease. I believe that the iodide of potassium should, to be effectual, be given in much larger doses than are ordinarily directed.

